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NOTES ON GEOGRAPHIC DISTRIBUTION

Nymphoides grayana (Griseb.) Kuntze: First record of Menyanthaceae for the state of Tocantins

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ABSTRACT: *Nymphoides grayana* (Menyanthaceae) is a macrophyte, and its occurrence is known in Brazil only for the states of Mato Grosso and Mato Grosso do Sul. In this paper, a new record of *N. grayana* is presented for the state of Tocantins, representing the first record of Menyanthaceae for the state and expanding the occurrence of the species for the North Region of Brazil.

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The state of Tocantins formally belongs to the North Region of Brazil; however, it is located on the geographical transition zone between Brazilian Cerrado and Amazon rainforest. The Cerrado is predominant in the state, occupying about 91% of it; the remaining 9% are part of the Amazon rainforest (IBGE 2004). Tocantins is one of the poorest states of Brazil in number of collections, and Tocantins and Rondônia are the only two states without registered collections of the family Menyanthaceae (CRIA 2013).

Nymphoides, the only genus of Menyanthaceae that occurs in Brazil (Amaral 2013), consists of aquatic plants, annuals in temporary ponds or perennial in permanent water bodies (Pott and Pott 2000). Amaral (2013) cited *Nymphoides indica* L. Kuntze as the only recognized species in Brazil, but Pott and Pott (1997, 2000) and Heckman (1998) cited *N. grayana* (Griseb) Kuntze, a species recognized originally only for the West Indies and Africa, occurring in the Pantanal Wetlands in the states of Mato Grosso and Mato Grosso do Sul (Ornduff 1969).

The taxonomic distinction of *N. indica* and *N. grayana* relies on the color of the petals. *Nymphoides indica* has white corolla lobes and *N. grayana* yellow ones (Figure 1A–E). Furthermore, the ultraviolet light emittance of the flowers of *Nymphoides* indicates that *N. grayana* can uniformly emit ultraviolet light from the petals (African plants) or absorb in the center and emit from the remaining portion of the petals (West Indies Plants), but *N. indica* absorbs the ultraviolet light completely (Ornduff 1969).

Nymphoides grayana is a typical macrophyte of the Pantanal floodplain, developing both aquatic and terrestrial forms, and with vegetative organs that often survive weeks of dryness on the areas of the Pantanal, and then become terrestrial during the dry season (Ritter 2013). *Nymphoides grayana* increases its frequency with certain disturbances then decrease with excess of stepping, and lives associated with others macrophytes (*e.g., Sagittaria guaynensis* Kunth), in the margin of shallow ponds (Pott and Pott 2000).

We found in the municipality of Conceição do Tocantins, a population of *N. grayana* and collected a specimen that represents the first record of the family Menyanthaceae to the state of Tocantins and the first record of the species for the North Region of Brazil (Figure 2). The area where the population occurs has similar characteristics as those found in the Pantanal wetland, with co-occurrence of *S. guayanensis* (Figure 1B), in a shallow pond, of an anthropic area near a highway (Figure 1A).

Nymphoides grayana (Griseb.) Kuntze, *Revisio Generum Plantarum* 2: 429. 1891.

Herb, floating, fixed, stoloniferous, perennial. Leaf 4.2–6.0 × 3.0–5.5 cm, sagittate to cordate, base sagittate or cordate, apex rounded, abaxial surface purple (Figure 1C). Flower yellow; calyx vinous-green, gamosepalous, 5-sepaled, *ca.* 0.6 cm long (Figure 1E); corolla yellow, gamopetalous, 5-petaled, *ca.* 1.2 cm long, fimbriated, not winged (Figure 1D).

Material examined: BRAZIL. Tocantins: Conceição do Tocantins, 29.I.2013, fl., A. Francener and A. J. Fernandes-Júnior 1249 (SP).

The Figure 2 shows a big gap on the distribution of *N. grayana,* however, this gap could not exist in the natural distribution of the species and probably is much more related with low collect effort and some misidentification of herbaria collections. We search data in literature mainly in local floras, without any reference to this species, only occurring in the Pantanal region (Pott and Pott 1997, 2000).

The present paper shows the importance of collect efforts in poorly sampled regions, such as Tocantins, to fill gaps in species distribution. Based in the data of the speciesLink network (CRIA, 2013) and with addition of the collection of the Herbarium of the Universidade Federal do Tocantins (HTO)—data obtained of Index Herbariorum (Thiers 2013)—that is not included in this database, we found only a ratio of 0.13 collections/km^2 of the collection density index

of Prance (1977) in the state of Tocantins. This ratio is a little underrated, because data of some herbaria from this state still are not incorporated on speciesLink network, but nevertheless is very far from the Brazilian reality of collection density index of 0,59 collections/km^2 (Sobral and Stehmann 2009).

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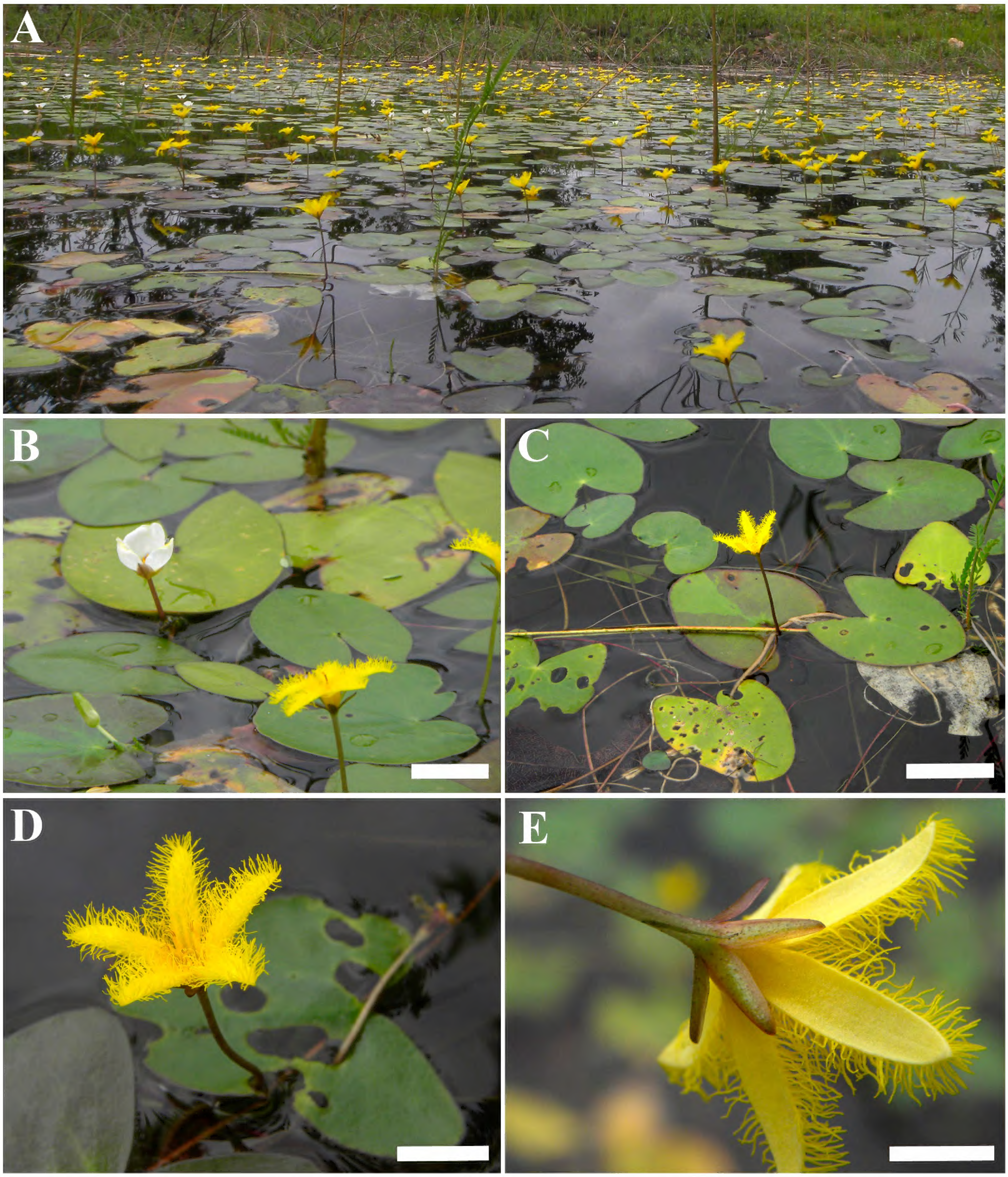

Figure 1. *Nymphoides grayana* (Griseb.) Kuntze (Menyanthaceae) in its natural environment in the municipality of Conceição do Tocantins, Brazil. A) Pond with a population of *N. grayana*; B) *N. grayana* near a *S. guayanensis* (scale bar = 2cm); C–E) Morphology of *N. grayana*: C) Habitus (scale bar = 3cm); D) Front view of the flower (scale bar = 1cm); E) Rear view of the flower (scale bar = 0.5cm).

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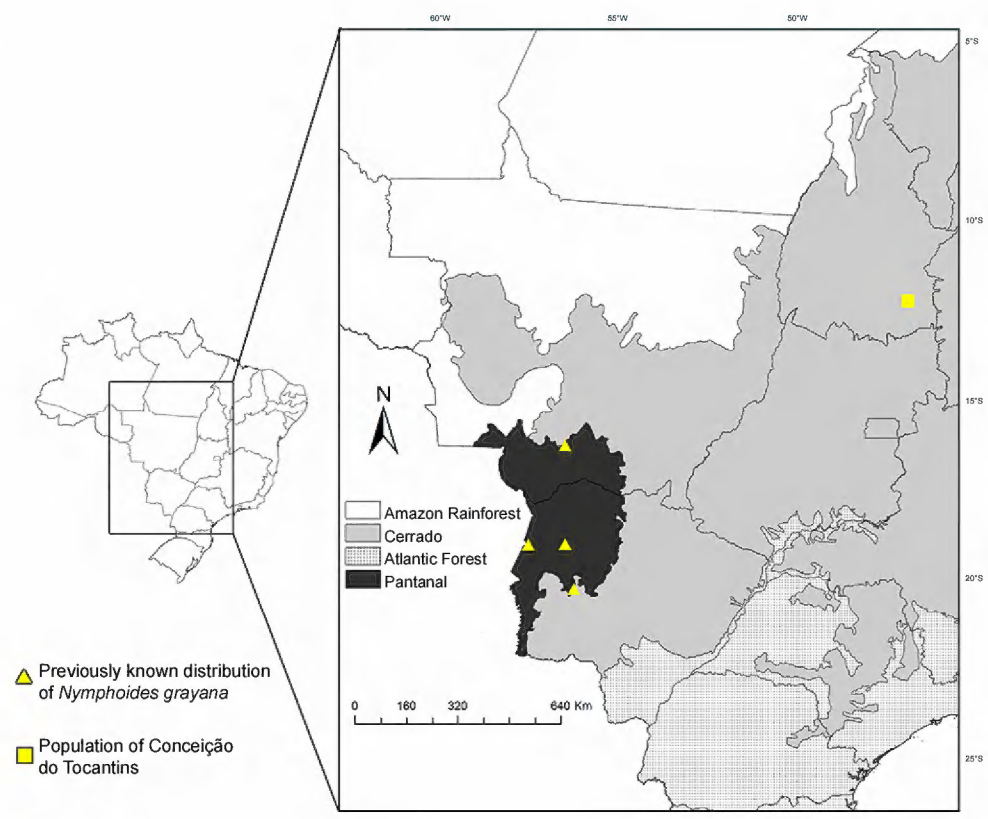

Figure 2. Geographic distribution of *Nymphoides grayana* (Griseb.) Kuntze (Menyanthaceae) in Brazil.

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